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Ellisembia pseudokaradkensis sp. nov. from Hainan, China

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Abstract—*Ellisembia pseudokaradkensis*, isolated from decaying dicotyledonous leaves submerged in a stream, is described and illustrated as a new species. The fungus is characterized by obclavate conidia with long flagelliform apical appendages. The new taxon is compared with other *Ellisembia* species having flagelliform appendages at the conidial tip.

Key words— aquatic hyphomycetes, fungal diversity, morphology

Introduction

Ellisembia was introduced by Subramanian to accommodate *Sporidesmium*-like species, with *Sporidesmium coronatum* Fuckel [≡ *E. coronata* (Fuckel) Subram.] as type species (Subramanian 1992). The genus is characterized by determinate or irregularly percurrently extending conidiogenous cells that produce distoseptate conidia, while *Sporidesmium* is restricted to those species that have conidiogenous cells without or with irregular proliferation and euseptate conidia (Subramanian 1992). Despite the segregation of a new genus from *Sporidesmium* in 1992, researchers continued to place some species with distoseptate conidia into *Sporidesmium* (Shi & Zhang 2007, Ma & Zhang 2007a,b); these were subsequently transferred into *Ellisembia* (Santa-Izabel et al. 2013). Wu & Zhuang (2005), who merged *Imicles* Shoemaker & Hambl. into *Ellisembia,* expanded the generic concept to include species that produce typically lageniform, ovoid, or doliiform, percurrently extending conidiogenous cells. Currently 60 species are included in *Ellisembia* (Index Fungorum 2017).

Several fungal species and genera occurring on dead stems or decaying branches of broadleaf trees have been described recently in China (Xia et al. 2015, 2016; Ren et al. 2012; Ma et al. 2007a,b, 2010). During a study of aquatic hyphomycetes in Diaoluo Mountain Preserve, Hainan Province, China, we encountered an unknown fungus sharing some features of *Ellisembia* that we propose here as a new species.

Materials & methods

The culture was isolated from decaying leaves collected on a broadleaf tree in Diaoluo Mountain Preserve, Hainan province, in southern China, by Z.F. Yu on April 2015. The decaying leaves were cut into several 2–4 × 2–4 cm sized fragments, which were flattened out on the surface of CMA (20 g cornmeal, 18 g agar, 40 mg streptomycin, 30 mg ampicillin, 1000 ml distilled water) for ten days; single conidia were isolated using a sterilized toothpick while viewing with a CX31 microscope, and cultivated on CMA in Petri plates. Morphological observations were made from CMA after incubation at 28°C for one week; pure cultures and a permanent slide were deposited in the Herbarium of the Laboratory for Conservation and Utilization of Bio-resources, Yunnan University, Kunming, Yunnan, P.R. China (YMF; formerly Key Laboratory of Industrial Microbiology and Fermentation Technology of Yunnan).

Taxonomy

Ellisembia pseudokaradkensis M. Qiao & Z.F. Yu, **sp. nov.** Plate 1

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Differs from *Ellisembia karadkensis* by its smaller, unbranched conidia with fewer septa.

Type: China, Hainan Province: Diaoluo Mountain Preserve, 18°43′N 109°43′E, elev. 1020 m, on submerged decaying leaves of an unidentified dicotyledonous plant in a stream, July 2015, J. Peng (**Holotype**, YMF 1.04266).

Etymology: Latin, *pseudokaradkensis,* referring to the similarity to *E. karadkensis* in the shape of conidia.

Colonies 2 cm diam. on CMA after 10 days, Mycelium partly superficial and partly immersed in the substratum. Conidiophores erect, macronematous, mononematous, straight or flexuous, dark to blackish brown, arising from creeping hyphae, 0–1-septate, 7–18 × 4–5 µm, base often specialized to T- or L-shape. Conidiogenous cells monoblastic, integrated, terminal, cylindrical, pale or dark brown, 14–15 × 4.5 µm. Conidial secession schizolytic. Conidia solitary, obclavate, mostly curved, tapering towards narrow whip-like apical tip, (81.5–)90.5–138(–149) µm long, 5.5–8 µm diam., truncate, 2.5–4 µm diam. at the base, 8–13-distoseptate, with 2–3 apical cells subhyaline or hyaline with

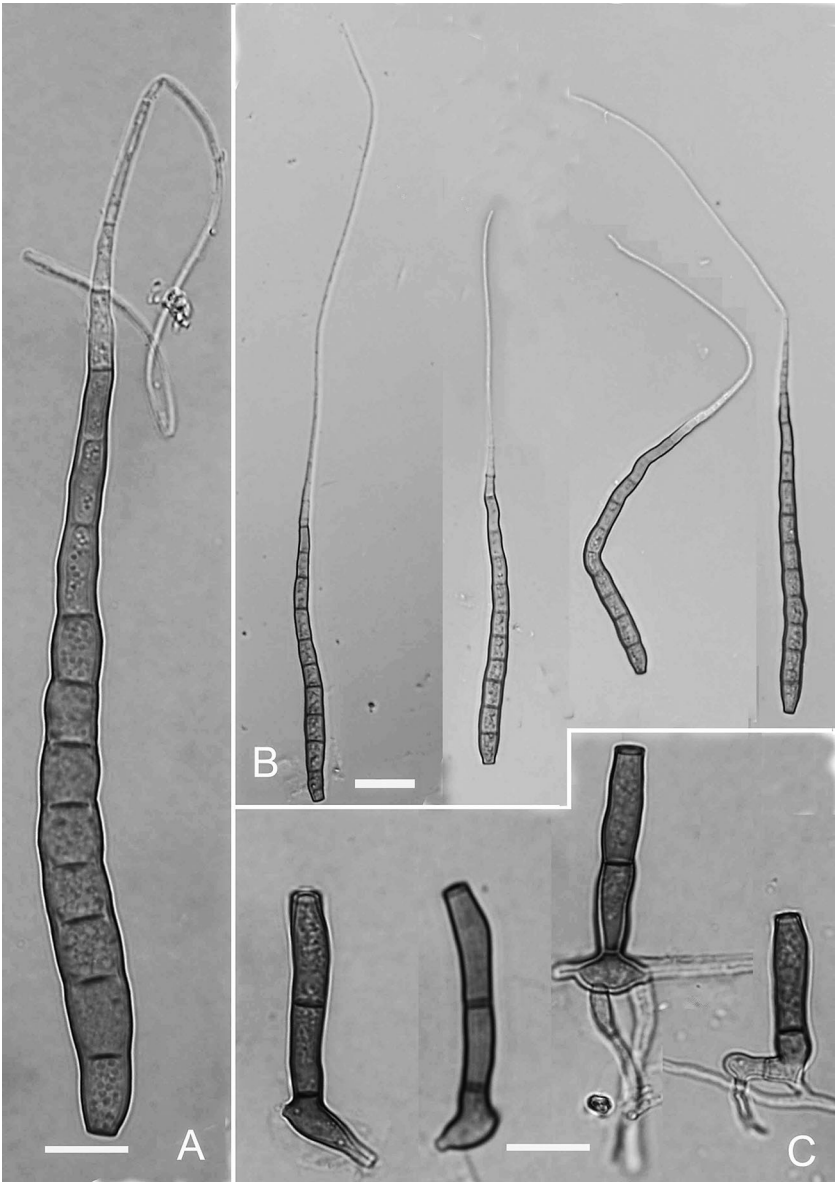

Plate 1. *Ellisembia pseudokaradkensis* (holotype, YMF 1.04266). A. Distoseptate conidium. B. Conidia with flagelliform apical appendages. C. Conidiophores and conidiogenous cells. Scale bars: A, C = 10 μm; B = 20 μm.

thin septa, other cells pale olivaceous to brown but dark at the septa, apical appendages (33–)57–148 μm long, 0.5–1 μm diam.

Discussion

Ellisembia pseudokaradkensis is characterized by flagelliform apical appendages and long, narrow conidia. Five other *Ellisembia* species have flagelliform appendages at the tip of conidia: *E. podocarpi* Jian Ma & X.G. Zhang, *E. photiniae* Jian Ma & X.G. Zhang, *E. flagelliformis* (Matsush.) W.P. Wu, *E. magnibrachypus* (Matsush.) Rajeshk. & S.K. Singh, and *E. karadkensis* Rajeshk. & S.K. Singh. *Ellisembia E. karadkensis* is distinguished from *E. pseudokaradkensis* by its branched conidia and *E. magnibrachypus* by its branched appendages, and *E. pseudokaradkensis* is distinguished from all five species by its distinctive combination of the number of conidial septa, conidial size, and length of apical appendage (Table 1).

Table 1. Comparison of *Ellisembia* species with appendages at the tip of conidia.

Species	Conidia			Reference
	Number of septa	Length × width (μm)	Apical appendage length (μm)	
E. flagelliformis	11–14	60–90 × 9–10	40	Wu & Zhuang (2005)
E. karadkensis	10–35	150–345 × 9.5–12.5	100 *	Rajeshkumar et al. (2012)
E. magnibrachypus	9–10	48–62 × 12–14	65	Matsushima (1975)
E. photiniae	10–16	92–170 × 13–16	43–90	Ma et al. (2010)
E. podocarpi	13–19	110–170 × 7.5–10	80	Ma et al. (2010)
E. pseudokaradkensis	8–16	90.5–138 × 6.0–7.5	(33–)57–148	This paper

* Appendage length estimated from illustration

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